Getting started with AV Garmin

AV Garmin is an ArcView extension to produce point, line and polygon shapefiles from data from your Garmin GPS unit. Used with a Garmin GPS data in either Waypoint+ or PCX exported (MapSource) format, AV Garmin allows you to easily create shapefiles in ArcView. Point, Line or Polygon features can be created from either waypoint or track data. Shapefiles can be projected into any ArcView supported format.

AV Garmin does not download directly from your Garmin GPS. You can use Garmin MapSource or Waypoint+ software to download your data, and then save the waypoints and tracks to text format. These text format files can be read by the AV Garmin extension. Other software can be used as well as long as they can save/export to either the Waypoint+ comma-delimited format or Garmin MapSource export (PCX) format.

- **Quick Start: MapSource**
- **Quick Start: Waypoint+**
- **Tips and Tricks**

Quick Start: MapSource

Step One

Download your data from your GPS to MapSource. See MapSource help if required. (Make sure you have the latest version of MapSource, as of 02/09/2004; version 5.4)

There are three requirements when using MapSource.

1) The coordinate data needs to be in **decimal degrees**. You can set this with the "Edit" menu -> "Preferences" menu -> "Position" tab. Choose, "Lat/Lon hddd.ddddd".

2) The datum also needs to be set. You can set this with the "Edit" menu -> "Preferences" menu -> "Position" tab. The "Map Datum" that you select here needs to match the datum of your other GIS layers that you want your gps data to overlay.

3) All MapSource files for input into AV Garmin need to be in **text tab delimited** format. AV Garmin expects this MapSource format. When you save your waypoint and track data; Select the "File" menu -> "Export" menu item.

Notations: Waypoint names should not have embedded spaces. For example, "WPT 001" should be edited to be "WPT_001". Only waypoints created using a GPS will work with AV Garmin. Waypoints created from within MapSource may not process correctly. Basically, once you have exported to text format, check the data for consistent format if you have processing problems.

* See "Tips and Tricks" below for information on pre-processing and data clean up at this step.

Step Two

Export the data from MapSource to the **tab delimited text** format.

* See "Tips and Tricks" below for information on pre-processing and data clean up at this step.

Step Three

Start ArcView, load and activate the AV Garmin extension.

Choose "MapSource w/elevation" if your unit records elevation data. This would apply if you have an eTrex Summit, Vista or GPS 76, GPSMap 76 and perhaps others.

Otherwise, choose "MapSource w/o elevation". This would apply if you have a regular eTrex, Venture, 12, 12XL, 12CX, 3+, etc....

Step Four

Choose, the other applicable options as necessary. If this is your first run try a simple waypoint processing.

Click the "Projection" button and define/select your output projection. This projection should match the projection of your existing shapefiles. If your shapefiles are in decimal degrees then select "Projections of the World - Geographic". This is often the case, when your "view" is projected.

Step Five

Click the "Create" button and follow the prompts.

Quick Start: Waypoint+ Input

Step One

Download your data from your GPS to Waypoint+. See Waypoint+ help if required. (Make sure you have the latest version of Waypoint+, as of 07/09/2001; version 1.8.00)

There are three requirements when using Waypoint+.

1) The coordinate data needs to be in **decimal degrees**. You can set this with the "File" menu -> "Configuration" menu -> "Modes" tab.

2) The datum needs to be set. You can set this with the "File" menu -> "Datum" menu. The datum that you select here needs to match the datum of your other GIS layers that you want your gps data to overlay.

3) All waypoint+ files need to be in text (**comma-delimited**) format. AV Garmin expects this format. When you save your waypoint and / or track data, the "save" dialog has the option "save as type:" . Select, "comma delimited".

Step Two

Save the data from Waypoint+ to the **comma delimited text** format. Save the waypoints and the tracks in separate files. Include, either "wpt" or "trk" in the filename so you know which feature type the files contains.

Notations: Waypoint names should not have embedded spaces. For example, "WPT 001" should be edited to be "WPT_001". Only waypoints created using a GPS will work with AV Garmin. Waypoints created from within Waypoint+ may not process correctly. Basically, once you have exported to text format, check the data for consistent format if you have processing problems.

* See "Tips and Tricks" below for information on pre-processing and data clean up at this step.

Step Three

Start ArcView, load and activate the AV Garmin extension.

Choose "Waypoint+"

However, if you have edited (in the field on your GPS) the "remarks/comments" field then choose "Waypoint+ optional". Choose this option as well if you know that the date and time "fields" are correct which may be the case if you have manually corrected or created a Waypoint+ formatted file. 90% of the time, choosing the default, "Waypoint+" is fine. Also, this is an option to try if you have followed all the instructions, but your data is still not being processed correctly.

Step Four

Choose, the other applicable options as necessary. If this is your first run try a simple waypoint processing.

Click the "Projection" button and define/select your output projection. This projection should match the projection of your existing shapefiles. If your shapefiles are in decimal degrees then select "Projections of the World - Geographic". This is often the case, when your "view" is projected.

Step Five

Click the "Create" button and follow the prompts.

Tips and Tricks:

The DFG GIS Unit strives to create tools that are compatible with each other. For example, AV Garmin and AV Geotools produce shapefiles with the same attribute set. They provide reciprocal functions: AV Garmin takes text files from your Garmin GPS and creates shapefiles in ArcView whereas AV Geotools takes shapefile centroids or other user-input to produce text files that can be uploaded back into your Garmin GPS.

The following are general guidelines and tips when using various DFG GIS tools.

1) Output from one extension can generally be used as input into the other.

2) When collecting GPS data (Garmin), accept the default naming of waypoints (001, 002, 003, etc…) and record your associated attributes on rite-in-the-rain notepaper. Accepting default waypoint naming speeds the collection of waypoints and is required if you would like to create polygonal features using AV Garmin.

3) Do not change the comments for waypoints on your Garmin GPS unit. There is a bug in the Garmin firmware; the default date and time contain incorrect data. The correct date and time, however are contained in the comment field.

4) The Garmin will not explicitly indicate the separate tracks in an active track log. However, either turning the unit on then off, or turning track collection off while collecting track data will make it possible to differentiate between tracks.

5) In general, use Garmin's MapSource software to download data from your Garmin GPS. Only older units like the 12, 12XL, 45, 48, etc… will work with the freeware version of Waypoint+.

6) Only waypoints and tracks are supported by the DFG GIS extensions; routes are not supported and are really just an ordered series of waypoints.

7) If you have an ArcView theme and would like to upload the position(s) of some selected feature(s) to your Garmin then use AV Geotools. AV Geotools can create either a Waypoint+ text file or a MapSource text file of the centroids of the selected feature(s). You can then load this file into either Waypoint+ or MapSource and upload the data to your Garmin GPS.

8) When your data is uploaded to either MapSource or Waypoint+, examine the waypoints and tracks. This pre-checking or pre-processing can help you avoid errors and/or extra clean up in ArcView.

9) Check the waypoint ID's for embedded blanks. Embedded spaces (blanks) within waypoint ID's are not allowed by AV Garmin.

10) Check geographic location, outliers can be errors and deleted at this step; these sometimes are the "default" waypoints in Kansas.

11) Check the number of points per track log / active log. If the number of points for a track is low, such as 1, 2, or 3 points for a track, then this log may be erroneous. The track logs can be viewed in Waypoint+ or MapSource and can be deleted if they are extraneous.

12) Current MapSource version tested, 4.06. Version 4.x should be fine.

13) Waypoint ID's / names should not have embedded spaces, for example, "PT BREAK" should be corrected to read, "PTBREAK"

14) Waypoints created within MapSource (waypoint not created on an actual GPS) may not work with AV Garmin unless the fieldset and data match those that would have come from your GPS.

15) When saving your (Waypoint+) text file for input into AV Garmin, save the waypoints and tracks in separate files. Note their contents by including "wpt" or "trk" somewhere in their filename.

16) Waypoint+ (freeware version) does not work with the newer Garmin units such as the eTrex's, 76, 76Map, etc.... The use of Garmin's MapSource software is recommended.

17) Current Waypoint+ version tested, 1.8.00. Version 1.7.xx should be fine.

18) The freeware version of Waypoint+ does not work with many of the newer Garmin models. A ~$29.00 version that does, can be obtained by contacting Dean at 3D Mapping (1-888-809-6105). This version current is not supported by the DFG GIS extensions.

19) Except for the GPS 76, GPSMap 76 units, all other "newer" Garmin units like the eTrex's, GPS V, etc…. do not store the date and time of waypoint capture. Only the 76's and the older 12, 12XL, III, III+, 48, etc… store the date and time of the waypoints.

19) Current versions of AV Garmin will be posted at http://maphost.dfg.ca.gov/

California Department of Fish and Game, (c) 2002